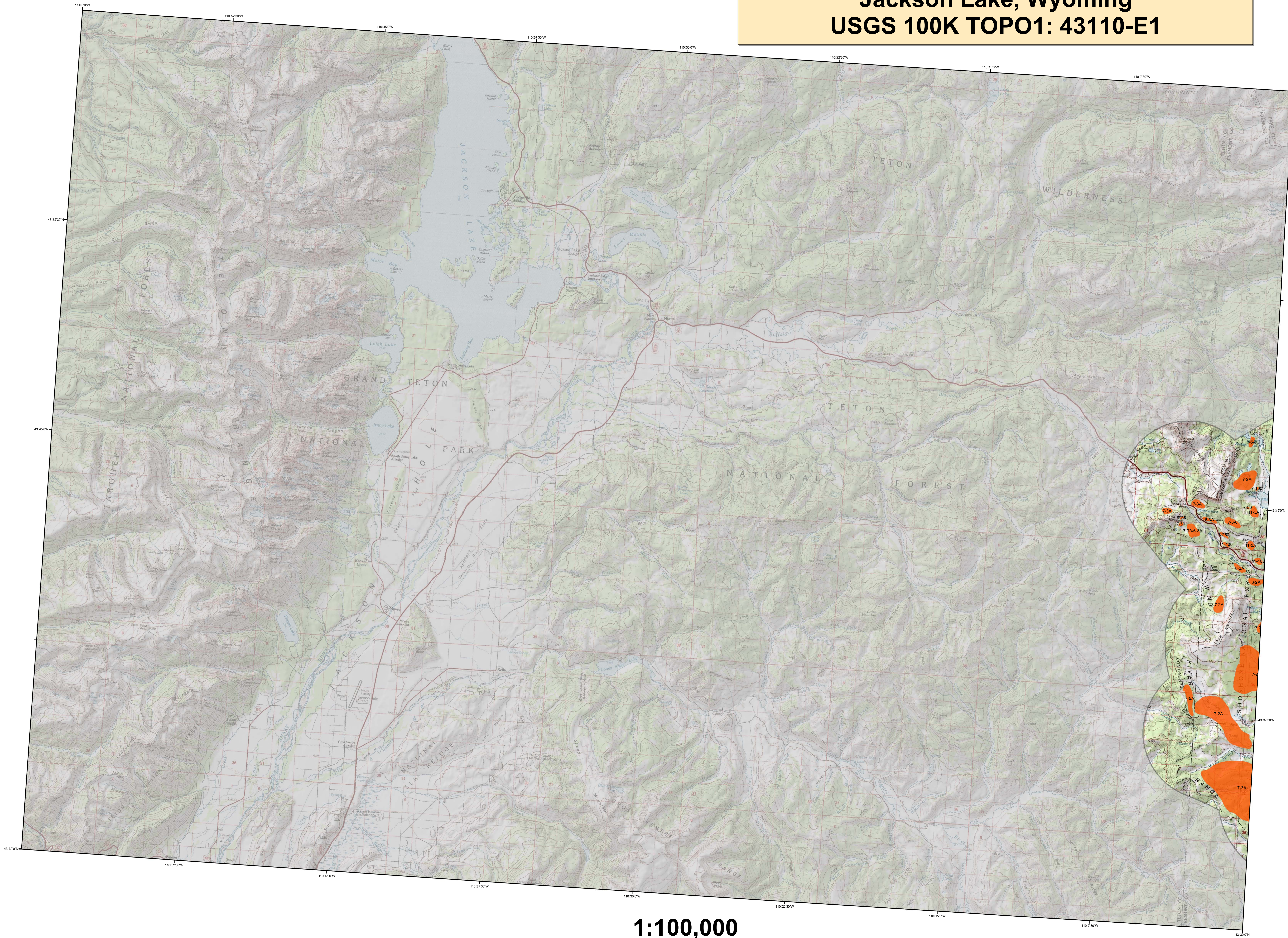


2006 Aerial Insect and Disease Survey

Jackson Lake, Wyoming

USGS 100K TOPO1: 43110-E1



1:100,000

Legend

Causal Agent(s) Not Flown in 2006

Use of the Number System
Example: 5-25 = The first number before the dash is the causal agent code. The number after the dash is the number of dead "fader" trees in the polygon or point. When recent dead trees are not counted, an intensity code of L-light, M-moderate, and H-high may be used after the causal agent code. Periodically, trees per acreage estimates are used after the causal agent code instead of number of dead "fader" trees (or an intensity code). For example: 5-122A = The first number before the dash is the causal agent code. The number after the dash is an estimation of the number of dead "fader" trees in the polygon per acre. In this case it would be an estimation that, on the average, one tree per every two acres would be a dead "fader" tree. In another example: 5-3A = that on the average, an estimated three trees per acre are dead "fader" trees. A "/" is used as a separator when a point polygon has more than one causal agent code.

Code Causal Agent	Primary Host	Code Causal Agent	Primary Host	Code Causal Agent	Primary Host
1 Douglas-fir beetle	Douglas-fir	49 Arthropod	Lodgepole Pine	108 Ice storm flagging	Cottonwood/Poplar
2 Engelmann Spruce Beetle	Engelmann Spruce	50 White pine blister rust	5-Needle Pine	107 Fall webworm	Cottonwood/Poplar
3 Mountain pine beetle	Ponderosa Pine	51 Dwarf mistletoe	Softwoods	106 Road salt	Softwoods
4 Mountain pine beetle	Lodgepole Pine	52 Eurytoma	Ponderosa Pine	105 Greenwood nematode	Scots Pine
5 Mountain pine beetle	5-Needle Pine	53 Includes #55, 56 & 58	All Tree Species	110 Oak wilt	Oak
6 Western pine beetle	Ponderosa Pine	54 Air pollution	All Tree Species	111 Kilauea disease	All Tree Species
7 Fir engraver	White Fir	55 Chemical damage	All Tree Species	112 Spruce ips	White Spruce
8 Douglas-fir engraver beetle	Douglas-fir	56 Lophodermium pinastri	Softwoods	113 Twined chestnut borer	Oak
9 Western balsam bark beetle	Subalpine Fir	57 Rhabdocline pseudotsugae	Douglas-fir	114 Anthracnose leaf spot disease	Bur Oak
10 Unidentified bark beetle	Softwoods	58 Lophodermium arcuta	Softwoods	115 Dieback	All Tree Species
11 Pine engraver	Lodgepole Pine	59 Lophodermium arcuta	Softwoods	116 Mortality	All Tree Species
12 Douglas-fir engraver beetle	Ponderosa Pine	60 Lophodermium concolor	Softwoods	117 Discoloration	All Tree Species
13 Lodgepole pine needle miner	Lodgepole Pine	61 Dothistroma pin	Softwoods	118 Flagging	All Tree Species
14 Jack pine budworm	Jack Pine	62 Needle cast (Hypodermaceae)	Softwoods	119 Quaking Aspen	Quaking Aspen
15 Spruce budworm, light defol.	Douglas-fir	63 Root Rot	All Tree Species	120 Aspen tortrix	Quaking Aspen
16 Spruce budworm, medium defol.	Douglas-fir	64 Unidentified disease	All Tree Species	121 Marssonina Blight	Ash
17 Spruce budworm, heavy defol.	Douglas-fir	65 Winter damage light	All Tree Species	200 Dieback (ash)	Cottonwood/Poplar
18 Douglas-fir tussock moth	Douglas-fir	66 Winter damage medium	All Tree Species	201 Dieback (cottonwood)	Hardwoods
19 Pine looper	Ponderosa Pine	67 Winter damage heavy	All Tree Species	202 Dieback (hardwood)	Oak
20 Pine tortrix	Ponderosa Pine	68 Diplodia	Softwoods	204 Dieback (oak)	Cottonwood/Poplar
21 Tent caterpillars	Hardwoods	69 Pinon bark stain	Common Pinon	210 Mortality (red cottonwood)	Eastern Red Cedar
22 Leaf beetles	Hardwoods	70 Fire	All Tree Species	211 Mortality (eastern cedar)	Hardwoods
23 Oak leaf roller	Hardwoods	71 Peronospora	All Tree Species	212 Mortality (hardwood)	Oak
24 Pine needle-shed miner	Ponderosa Pine	72 Windthrow	All Tree Species	213 Mortality (oak)	Spruce
25 Pine tussock moth	Ponderosa Pine	73 High water damage	All Tree Species	214 Mortality (spruce)	Softwoods
26 Variable oak leaf caterpillar	Hardwoods	74 Avian	All Tree Species	220 Discoloration (ash)	Cottonwood/Poplar
27 Unidentified defoliator	All Tree Species	75 Aspen decline-multiple agent(s)	Common Pinon	221 Discoloration (conifer)	Eastern Red Cedar
41 Heterobasidion annosum (Fomes annosus)	Softwoods	76 Juniper mortality-unknown agent(s)	Juniper	222 Discoloration (cottonwood)	Eastern Red Cedar
42 Amblyaria octogona (Amblyaria melia)	Softwoods	77 Gambel oak decline-unknown agent(s)	Quaking Oak	223 Discoloration (oak)	Oak
43 Polyporus schweinitzii	Softwoods	78 Limber pine decline-multiple agent(s)	Limber Pine	224 Discoloration (spruce)	Spruce
44 Rhizoglyphus	All Tree Species	79 Leaf damage	Unknown	230 Herbicide (cottonwood)	Eastern Red Cedar
45 Cytospora	Unknown	80 Unknown pathogen	Common Pinon	231 Herbicide (eastern cedar)	Hardwoods
46 Western gall rust	Unknown	100 old pinon mortality	Lodgepole Pine	240 Flagging (hardwood)	Hardwoods
47 Coniophora	Unknown	101 old elm disease	Elm	250 Unidentified defoliator (cottonwood)	Cottonwood/Poplar
48 Stactobrodia rust	Lodgepole Pine	102 old elm disease	Ponderosa Pine	251 Unidentified defoliator (elm)	Elm
		103 Ips bark beetle	Spruce, White Spruce	252 Unidentified defoliator (hardwood)	Hardwoods
		104 Drought killed narrow leaf cottonwood	Narrowleaf Cottonwood	300 Mortality (pine)	Pine

USGS 100K Quad - Location Map



Legend
Flow Area in 2006
State Boundaries
Counties

How Aerial Surveys Are Conducted

Data represented on this map are based on aerial observations manually recorded onto a map. This procedure is considered both an art form and a form of scientific data collection, and is highly subjective. An observer only has a few seconds to recognize the color difference between healthy and damaged trees of different species; diagnose causal agents correctly; estimate intensity; delineate the extent of damage; and precisely record this information on a georeferenced map. Air turbulence, cloud shadows, distance from aircraft, haze, smoke, and observer experience can all affect the quality of the survey. These data summaries provide an estimate of conditions on the ground and may differ from estimates derived by other methods.

Aerial surveys provide information on the current status for many causal agents, and are important when examining insect activity trends by comparing historical and current survey data over large areas.

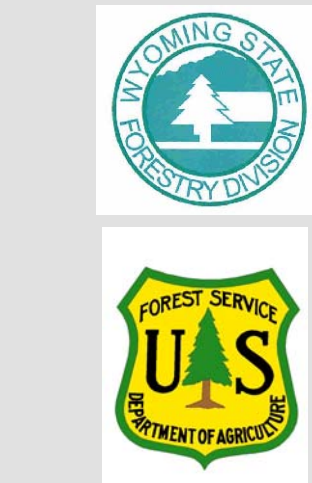
Overview surveys are a snap shot in time and therefore may not be timed to accurately capture the true extent or severity of a particular disturbance activity. Aerial surveys can be thought of as the first stage in a multi-stage sampling design. Other remote sensing approaches, including aerial photography, electro-optical sensors, and specially designed aerial surveys with modified flight patterns, can be used to more accurately delineate the extent and severity of a particular disturbance agent. The preceding methods are often more costly than overview surveys, and are generally reserved to address situations of sufficient environmental, economic, or political importance.

Area surveyed by Al Dymerski
08/01- 08/03 & 08/15 - 08/17 /2006
Map Created: 01/12/2007
Projection: UTM NAD83 Zone 13
Author: J. Ross, USDA Forest Service

DIRECT ALL INQUIRIES TO:

Wyoming State Forestry Division
1100 West 22nd Street
Cheyenne, Wyoming 82002

USDA Forest Service, Region 2
Renewable Resources
Forest Health Management
PO Box 25127
Lakewood, Colorado 80225



*****DISCLAIMER*****
Due to the nature of aerial surveys, the data on this map will only provide rough estimates of location, intensity and the resulting trend information for agents detectable from the air. Many of the most destructive diseases are not represented on this map because these agents are not detectable from aerial surveys. The data presented on this map should only be used as a partial indicator of insect and disease activity, and should be validated on the ground for actual location and causal agent. Shaded areas show locations where tree mortality or defoliation were apparent from the air. Intensity of damage is variable and not all trees in shaded areas are dead or defoliated.

The insect and disease data represented on this map are available digitally from the USDA Forest Service, Region Two Forest Health Management group. The cooperators reserve the right to correct, update, modify or replace GIS products. Using this map for purposes other than those for which it was intended may yield inaccurate or misleading results.

A data dictionary and digital copies of this map and the insect and disease data are available at: <http://www.fs.fed.us/r2/resources/fhm/aerialsurvey/>